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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/813,691	01/15/2003	Raanan Fattal	383/03758	4149

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EXAMINER

STREGE, JOHN B

ART UNIT	PAPER NUMBER
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2624

DATE MAILED: 06/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/813,691

Applicant(s)

FATTAL ET AL.

Examiner

John B. Strege

Art Unit

2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 January 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-15, 17-25 and 27-30 is/are rejected.
- 7) ☒ Claim(s) 6, 16, 26 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

***Claim Objections***

1. Claims 1-2,6,11-12,16,21-22, and 26 are objected to because of the following informalities: A period should only be used at the end of the claim, however the above listed claims use a period after the separate letters used to distinguish the sections (i.e. A.). Examiner recommends changing all of the lettered sections to use parenthesis instead of a period, A) for example. Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-2,7,11-12,17,21-22, and 27 are rejected under 35 U.S.C. 102(e) as being anticipated by Tastl et al. USPN 6,993,200 (hereinafter "Tastl").

Tastl discloses a gradient domain compression system for generating, from an input image having a high luminance dynamic range, an output image having a lower luminance dynamic range (col. 1 lines 5-11, see figures 5-8) the system comprising: A) a gradient image generator module configured to generate, from the input image, a gradient image representing, for respective points of the input image, gradient values in the luminance of the input image (Tastl discloses in figure 5 taking an original luminance

image, dividing it into subbands 516 and obtaining an original contrast image 518 by applying a gradient formula [3.1], col. 7 lines 12-30); B) a gradient compression module configured to receive the gradient image and generate a compressed range gradient image in which the range of gradient values are compressed (the original contrast images 518 [obtained by a gradient formula] are sent to the compression procedure 526 to compress the range of gradient values, col. 11 lines 24-48); and C) an output image generator module configured to receive the compressed range gradient image and to generate therefrom an image, the image generated by the output image generator module comprising the output image (550 shows the rendered luminance image obtained from the compressed image).

Regarding claim 2, Tastl discloses a gradient attenuation function generator module configured to generate, for respective points in the gradient image, a gradient attenuation function whose value for respective points in the gradient image is configured to reduce the range of gradient values in the gradient image (col. 7, lines 12-30, equation 3.1 is read as the gradient attenuation function), an attenuated image gradient generator module configured to generate, from the gradient image and the gradient attenuation function, the compressed range gradient image (col 11 lines 24-48).

Regarding claim 7, the output image is close to the compressed gradient image (col. 10 lines 4-14).

Claims 11-12, and 17 are similarly analyzed to claims 1-2, and 7 respectively.

Claims 21-22, and 27 are similarly analyzed to claims 1-2, and 7 respectively.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 3-5 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tastl USPN 6,993,200 in view of Ito USPN 5,881,181.

Regarding claims 3-5, Tastl does not explicitly disclose that the gradient attenuation function generator module is configured to generate the gradient attenuation function to provide values for respective points of the gradient image so as to reduce relatively high gradient values in a progressive manner, such that higher gradient values are reduced more than lower gradient values, or such that the lower gradient values are increased more than the higher gradient values.

Ito discloses a method and apparatus for compressing the dynamic range of an image (title of the invention) using a Laplacian pyramid technique in which the dynamic range compression can be carried out in accordance with different regions (col. 4 lines 32-64, this laplacian pyramid allows the luminance values to be reduced in a progressive manner). This allows for a high degree of freedom in the image processing, and makes the image more perceptible (col. 3 lines 10-15).

Tatsl and Ito are analogous art because they are from the same field of endeavor of compressing the dynamic range of an image.

At the time of the invention it would have been obvious to one of ordinary skill in the art to use the process of Ito to allow the gradient attenuation function of Tatsl to reduce the gradient values in a progressive manner. The motivation for doing this would be to make the final image more perceptible and to allow a high degree of freedom in the image processing. Thus it would have been obvious to one of ordinary skill in the art to combine Tatsl and Ito to obtain the invention as specified in claims 3-5.

Regarding claim 8, Ito discloses that the using a Laplacian pyramid technique, thus the laplacian of the output image (5 of figure 1) would correspond to the divergence of the copressed range gradient image.

Claims 13-15 and 18 are similarly analyzed to claims 3-5, and 8 respectively.

Claims 23-25 and 28 are similarly analyzed to claims 3-5, and 8 respectively.

6. Claims 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tastl USPN 6,993,200 in view of Chang et al. USPN 6,757,645 (hereinafter "Chang").

Regarding claim 9, Tastl discloses preprocessing an original image 514, however does not disclose using the logarithm of the input image. Furthermore the lower frequency subband image 546 are important since they are used to render the output image.

Chang discloses the well known procedure of taking the logarithm of an input image in order to enhance the lower intensities.

Tastl and Chang are analogous art because they are from the same field of endeavor of image processing.

At the time of the invention it would have been obvious to one of ordinary skill in the art to take the logarithm of the original image to enhance the lower intensities. The motivation is that the lower intensities are used to render the outputted image, thus it would be advantageous if they were enhanced. Thus it would have been obvious to one of ordinary skill in the art to apply a logarithm to the input image to obtain the invention of claim 9.

Regarding claim 10, if a logarithm is applied to an image then an exponent would need to be applied to reverse the logarithm, thus it would be obvious to have a post-processor do so.

Claims 19-20 are similarly analyzed to claims 9-10 respectively.

Claims 29-30 are similarly analyzed to claims 9-10 respectively.

### ***Allowable Subject Matter***

7. Claims 6, 16, and 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

USPN 6,985,615 Image processing apparatus, method and memory medium.


***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John B. Strege whose telephone number is (571) 272-7457. The examiner can normally be reached on Monday-Friday between the hours of 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on (571) 272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JS

  
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